

PYRO»TECHNICS

The Now & Then Newsletter of
GENERAL TECHNICS

Created & Perpetrated by

JEFF & CAROL DUNTEMANN

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EUGENICS BLUES

I'VE BEEN THINKING a lot lately about life-tech, the various guises of genetic engineering. I'm a champion worrier, and I've found a worry that few people evidently share. But it's real, and I lay it before you: We are muddying up the human gene pool.

The best example I can think of is the rise in the incidence of hereditary diabetes; that is, the nasty kind the strikes young and makes little kids shoot up with insulin every day or die. Used to be people born with that defect didn't live to procreate, so the gene was to some extent self-limiting. Artificial insulin allowed them to live reasonably normal lifespans. Childbirth was still dangerous for diabetic women, but good med tech has removed that barrier. The relationship between diabetic women giving birth and diabetic children appearing is not one-to-one but statistical because the gene is recessive; otherwise the problem would be uglier and more apparent to the popular mind.

Yet it is happening. Evolution is through with us as a species; our biological design will not improve further. Why? Technology has prevented the weak and many of the genetically defective from dying before they reproduce. That is evolution's only gambit, and we've handily turned it aside. No one seems upset. Not surprising; for natural selection to work, large numbers of people have to die young. Nobody's gonna cheer that.

Over the next few hundred years, technologically defeatable (but not correctable) defective genes will spread throughout the gene pool. In time even natural selection won't work because everyone will have the bad genes. Taken far enough into the future, everyone is pretty much related to everyone else.

This will mean that we will be dependent on our technology to survive as a species. Ugly thought--if we blast ourselves back to the stone ages, we won't last long as a species. This troubles me. Technology should be our road to the stars, not to extinction.

There is an obvious solution that nobody but me seems to like--ask people who are likely carriers of damaged genes not to reproduce. Nobody has to die to stop a bad gene that way--but people froth at the mouth denouncing the scheme as all manner of nastiness, usually connected with Nazism, the end of freedom, the breeding of supermen, and other such crap. Breeding supermen hell--I'd just like to see us hang onto what superness we've already got.

The drive to have children--not just any children but my children--is as powerful as it is irrational. Not bad--just above and beyond rational discourse. Many people I've spoken to admit to the problem, but keep saying: Something will turn up. Something will be developed to correct the problem. In the meantime, I want to have my own children, thank you.



**GENERAL
TECHNICS**

I guess.

Many people who discounted fertility control pointed to human genetic engineering as the obvious "better" solution. Lordy, do you know what that means?

Consider what engineering is: The establishment of a body of repeatable techniques for manipulating the physical world in a predictable fashion. Fine. A body of techniques enabling us to zap bad genes out of a person's genetic inheritance is a fine idea--but for one thing: Where does that body of techniques come from???

From experimentation. No other way. No engineering technique has ever sprung full-grown and foolproof into the textbooks. Uncounted bad tries get discarded before the workable techniques become known.

Sadly, in human genetic engineering, the "bad tries" would be real, living, breathing, thinking human beings. For a while, at least.

No matter how much we think we may be able to dope out about the structure of human genes by indirect methods, there comes the time when you must alter the physical structure of a human nucleus which will guide its cell in becoming a human being. It may work. But suppose it doesn't? Suppose when we blast the gene carrying diabetes we alter something else utterly unawares, and the poor child is brought into the world without an arm, or with opaque corneas, or horribly disfigured? Well, that method didn't work...so what becomes of the "bad try"? Toss it in the trash and advance the microscalpel another 200 angstroms?

I have a suspicion that the human genetic code will not be found to be simple. The stretches of DNA which cause a pancreas to fail early are probably not clumped all in one place--there will be thousands or millions of "spots" along a gene which might need touching up. Nor is it impossible that one such "spot" services many different aspects of the human structure. I fully

GENERAL TECHNICS

is an organization of fannish techies (and not techie fannies, as some wiseass reported) who pool information, resources, and experiences in pursuit of a good time and an occasional profit. The group meets mainly at cons, hamfests, and private Perserker Weekends.

BECOMING A MEMBER assumes you're willing to contribute to the group. This entails answering questions (at very least) by phone or SASE, concerning your own personal areas of expertise. So that people know what those areas are, you must submit a completed questionnaire and be listed in the General Technics Information Handbook. To obtain a questionnaire, send an SASE to:

Jeff Duntemann
301 Susquehanna Road
Rochester NY 14618

THAT DONE, return the questionnaire, a quantity of first-class stamps, and one American dollar bill. You will receive PyroTechnics until your stamps run out. You will know your brethren by the symbol they wear, and if you spot the symbol on a bicycle seat, well, then, sit on it!

suspect that the human genetic code is stochastic as hell--the millions of aspects of humanness may be spread out statistically across the three feet of DNA helix in ways that nothing but the cell itself understands or will ever understand.

You computer jocks may appreciate this analogy: A large computer program in machine-code form is a very long line of numbers like 56 7E C2 44 2A etc. Suppose you were faced with the problem of correcting a defect in that program--involving hundreds or thousands of those inscrutable little hex bytes--without benefit of the "source" program which tells you which byte is intended to do what. Imagine, further, that running the program even once to see if it's fixed might make a human being suffer and die--would you do it?

Multiply the difficulty by a million or so, and you'll get a notion of what we're up against.

It's an ugly problem with roots in every darkest corner of our animal origins. There are basically two solutions: withholding life and reforming life. Everybody hates the thought of withholding life--but it seems nobody has clearly thought out the problems of reforming life. And every time technology allows a genetically defective child to live long enough to claim the right to reproduce, the problem gets darker and deeper and more, tangled.

I only get pilloried when I make judgements on others, so let me make one on myself. I can no longer plead utter ignorance of the genetic deck I was dealt at conception. Technology has given us the means to know with some uncertainty what genes we're carrying. Were I to willingly cooperate in giving life to a child, knowing the child was likely to be born defective, I could never forgive myself.

Look at yourself in a mirror and ask the same question. Better still--imagine yourself as one of those "bad tries."

Perhaps human genetic engineering is the one discipline we should not pursue.

Home Town Boy Meets Stars

by Chuck Ott

I recently bought a full-size American car, because they're quite cheap on the used market these days. It's a brown, four-door '74 Pontiac Catalina, and you can say what you like about its mileage (wretched), its handling (nonexistent) or its interior room (large, but inconveniently placed). But it sure does have one advantage no little car has: it is very comfortable to sit on the trunk lid, lie back against the rear windshield and look up at the stars with binoculars.

I bought the car because I've moved out to the suburbs with my brother. I don't care much for the suburbs, I've found, and I will have moved back into the city by the time you read this. But in the mean time, I can see a very large number of stars from way out here.

Please understand that when I say "a very large number of stars," I mean about a hundred at one time. If you are as thorough-going a city boy as I am, that's impressive. Ten stars at once are impressive from most of the places I've lived.

This is a pretty funny situation, and I've written two humorous short stories about city dwellers discovering stars for the first time. This marks about the third time I have re-discovered the sky myself, one of the other times being in Viet Nam where it got quite dark at night.

So the other night, after a very annoying day filled with incidents it would be pointless to relate, I decided I needed to get good and drunk. I parked the car in the middle of the driveway, turned off all the house lights and set myself up with a rolled-up mat for a sort of stiff pillow, my binoculars, and Hiram Walker's Brown Jug bourbon, which is tasty and reasonably priced. Here's what I saw:

Boy, are there a lot of the little boogers up there! This is, of course, the sort of profound thought that occurs to me when I've been drinking. But still -- I've been writing science fiction for years, full of people cruising hither and yon across the galaxy. I've written descriptions several times of the star-crowded sky of space, filled and exuberant with clouds of light. It should not have been such a revelation to me to find how many stars you can see with a pair of 7x35's.

But it was. I was fascinated to sweep through the sky looking at nothing and everything. The sky is filled with stars. Why didn't I know that?

Can you remember a novel or story that goes with each of these names? Aldebaran, Algol, Altair, Antares, Arcturus, Betelgeuse, Capella? I can, with the rest of that lovely alphabet still to go. Where the hell are they? I can pick out Vega, which is the brightest star in the sky, because I found it on the star map in Astronomy. (I subscribe to that magazine, taking it purely on faith that the things they tell me about aren't completely fictitious.) But I've never had much luck picking out any constellations except The Big Dipper and Orion. How is it that I've been reading about these places most of my life, and can't pick them out in front of my face?

By the way, since Jeff has mentioned that you can learn valuable information from listening to real whackos, I should tell you about a valuable theory I learned from the astrologers. You probably were told a story, when you were small, that the constellations were first dreamed up by shepherds watching their flocks at night. They imagined patterns in the stars, and then made up stories to go along with them -- remember that? I have a feeling this is nonsense, as anyone can see by looking at the stars. They don't suggest patterns at all. Have you noticed

that the connect-the-dot diagrams you see to outline the constellations are drawn differently in different books?

Mark Edmund Jones, in Astrology: How and Why It Works, suggests that ancient astrologers (who did not confine themselves to the zodiac) first theorized that various parts of the sky were associated with various personality traits. They then symbolized these with descriptive names, so that Taurus, for example, described a group of stars thought to impart certain bull-like characteristics. Much later, the connect-the-dot pictures were thought up as mnemonic devices. I must admit that this theory makes much better sense to me.

My ignorance of the sky goes on. I saw a dot that appeared overhead, crossed ten or fifteen degrees and vanished. It remained a dot even in my binoculars. Was it a satellite, emerging into the sunlight and then re-entering the Earth's shadow? Or just a very high airplane?

Aren't the stars supposed to be different colors, blue and red and yellow? Vega might be slightly blue, but all the rest just look white to me. Even using the lenses, I couldn't pick out any real color variation.

As I got drunker, and receded further into the science fiction I read as a kid, I discovered something that will make the astronomical hobbyists among you cringe. I've found that I like light pollution. The city lights of Chicago wipe away the stars in the entire eastern half of the sky, and flood the rest with an orange-white patina. I'm sure it's a great nuisance to astronomers. But drifting through the stars with my binoculars, peeping through that warm wash of illumination, I thought back to that wonderful Alex Schomberg illustration that covered the endpapers of the old Winston Juvenile series books. Remember that, with a convoy of space ships rising through space which was somehow thick with beams of sunlight? The sky was a supportive fluid of light in which the stars were bubbles. That picture made a big impression on me as a kid, and it was nice to have it brought back.

So it comes to that -- illusions and fiction mean more to me than reality. My concept of "stars" is what I learned from Jack Vance and Robert Heinlein when I was small, not what I occasionally saw out my night window. The "dark night sky" is a land filled with landscapes and people to me. I can't identify it with the salt-spill I actually saw.

But the real stars are very beautiful. I've always thought so.

I suspect that everyone who has a sense of wonder about the real world comes to it the same way. We start with pictures and fictions and illusions, and through them, we come to see the beauty of the real. We start with talking cartoon animals and come to appreciate real animals later. We pore over the simplified landscapes of pictures or television, and then open our eyes to the grass and trees that grow.

After a while I got so drunk I couldn't hold the binoculars up. I slipped off the car and stood unsteadily upright. I turned sloppy circles trying to look at the whole sky, making a sort of shambling dance. Then I went inside and went to sleep. It was cloudy for the next few days.

GT BIODATA

VICTOR KOMAN

Victor Koman's first word (according to his parents who never lie and should know) was "Sputnik". Being of Russian extraction, this is understandable. Early on, my folks were determined to turn me into a fan by giving me pretty workbooks about The Universe and letting me watch Men Into Space on TV. They also ordered me to shut up at the dinner table and bought me comics for that express purpose. Cut to the 6th grade where I pick up (of course) a Heinlein juvenile, see a pretty Virgil Finlay ad for something called the Science Fiction Book Club, and I'm off.

I decided to major in physics and become an astronaut. Attended CU Boulder in 1972 under a Navy ROTC scholarship, was told they didn't need any more astronauts, resigned and majored in TV Broadcasting at San Jose State. Took up writing as a vocation. If I couldn't go there, I'd damned well write about it. Spent another year at UCLA majoring in philosophy and called quits to the whole thing (though my minor in computer science had whetted my appetite). Found out in 1975 that there was more to cons than the programming (Parties? Bheer?!).

In 1977, I sold a story to Galaxy which appeared in the Feb. 1978 issue. And I actually got paid for it. The story has been extended into an unsold novel and there has been a subsequent one, also unsold. Biggest sale to date was of the galaxy-spanning adventure, "Saucer Sluts", hard-core in many respects.

I'm not a techie so much as an awestruck admirer of anyone who can make an LED blink (after I've attached the LED and the wires, I always wind up with a spare prong or three). I am drooling in expectation, though, of the laser tubes courtesy of David Levine. That will give me the incentive to learn which way electrons flow.

I've worked in bookstores both straight and porn, edited a fortnightly newspaper, done typesetting, sat as a night guard in front of Don Rickles's home (vicious poodles), and now am ending a year of employment at Revell, the model company.

I like to shoot photographs and semi-automatic weapons and know the pleasant aroma of sulfur as it flares up under your face. I admire Ted Taylor, but really could not care less if the World Trade Center is destroyed by a meteor, a fizzle fission blast, or rent control. I could build an A-bomb to fit in a toilet tank, but building a timer for it would baffle me into incoherence.

Oh, yeah. I'm 25. A tenth of my life over and done with. *sigh*

Dave Powell

Dave Powell was born on June 14, 1958 in a hospital that no longer exists on the outskirts of Newark, Ohio. I spent my first eight years in the small town of Granville, Ohio in an old house next to a four acre stockyard. Our old place was occupied by at least five kids, one housekeeper, two parents (standard number), several dogs and eight times as many rabbits. My dad had a radio and TV shop next to the house which burnt down when I was six or seven. All in all, it was a fine place to live.

In 1966, we moved to a farm on the opposite side of the lake from Thornville, Ohio. It was a paradise for growing children (by 1969 there were eight of us). Our farm is a one hundred and thirty acre plot of rolling hills of which twenty are woods and the rest rotated between crops and pasture. Smack dab in the middle of the farm is a collection of buildings, old rusting cars and farm equipment which the township commissioners would like to call a junk yard but I call home. We do have a lot of neat things though, from our old crane with a sixty foot stick -to- our non-operational gov't surplus radar system -to- our eight 7-track tape decks and two Nova computers with a combined core area of 128K -to- my chopper 1953 Studebaker. We have as best I can tell 3 combines (one works), 7 tractors, and a whole bunch of cars and trucks (many more than I can remember) (I heard that crack!)

I guess I grew up pretty normally but I can't be to sure because I never met any one else who did. I have to admit that I have my own quirks though, such as, an unreasoned fear that I have of being attacked by crazed, psychopathic, man-eating, tank retrievers (sometime if you catch me in the

right mood I'll show where one actually bit me) (luckily I got away before it could satiate its hunger). Other than that I feel pretty sound emotionally, except, for some reason, I started reading SF when I was thirteen and never quit! I graduated High School in 1976 after completing a rigorous college prep program in which I actually even got to take physics for one year! (I mostly studied the insides of my eyelids in physics)

I started College that same year at Ohio State University and joined a fraternity, EKO. I soon found out (as Harlan Ellison did at a frat just up the street some years earlier) fannish type people and frats don't tend to mix well (I left with an awful big grudge during the winter quarter of my freshman year)(I figured out our frat's initiation process and it smacked of Rev. Moon's mind control tactics)(they didn't like that, neither did I)

I joined Starwind after I met Elbert Lindsay and Kathy McIntosh crossing the South Oval with a box of the third issue. I stopped them and demanded that they sell me one on the spot! I don't think they ever understood. (In case you've never heard of Starwind, it is an outcropping of the Infamous Terran League of SF based in Columbus. It's a magazine published by fans and other people with a professional type format. Our purpose was to provide a place for publication of beginning writers, the staff and artists being unpaid, the writers receiving $\frac{1}{2}$ ¢ per word which has now been raised to 1¢/word. (Look for it at a future Con!) Anyway, Bob Malloran who was also a member of Starwind Press was the person who introduced me to all you zanies back in '77.

My interests are comic book collecting (I read my first comic Jan. 23, 1978, I now have over 200 issues), Scuba, Fencing, Welding (actually this is my major here at OSU)(See the GT Info Handbook), Flying, Robots, Blinkies, Stained Glass (thanks to Steve Johnson & Carol Schmidt), junk, Writing SF (only when reports are required for one of my engineering classes), Farming (as a sideline when I'm bored of running around in circles), and Girls (of course)(No, can't barely forget them!) Enough!

BOOKS

SIFTING THE SUMMER BOOKPILE--True Facts is a collection of everything I used to read the National Lampoon for. What used to be a real funny rag is now mostly gross and denigrating to women--except for the True Department, which collects weird goofball stories and photos from the Real World and put them all together. Kind of like Readers' Digest's "Life in these United States" only kinkier.

The collection is a howler. From it I learned why Coca Cola will never catch on in China; how it is indeed possible to hold up a gas station by threatening to make the attendant eat dog turds; how it is possible to pass a \$25 bill by claiming it's from Canada, and other such stuff. Good stuff to read when you can't concentrate on calculus or 8086 assembler because the car is vibrating too much.

Basic Construction Techniques for Houses and Small Buildings Simply Explained by the U.S. Navy. My guess is that this used to be called "Field Manual BC-4096-L" and that Dover Books retitled it when they did the reprint. 500 pages of small print and diagrams for \$6.50. I have a number of military field manuals, mostly training tomes for radio operators, and they are without exception deadly dull. Oddly, this one shines by comparison; it's written with as light a heart as the Navy will allow, in excellent plain, noninflated, nonbureaucratized King's English. If you want to build a house (or barracks, or a privy) this will tell you how, right down to tips on assigning three men to lay hardwood flooring; one to cut, one to fit, and one to nail. It covers all types of masonry, surveying, excavating, framing, wiring, plumbing, the works. Certainly the most pragmatic and detailed build-it-yourself book I have ever encountered. All the more amazing that it came from the US government.

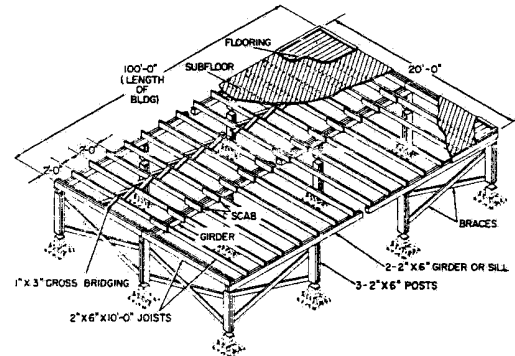


Figure 10-5.—Braced piers, sills, girders, and joist construction.

From the Walls In by Charles Wing, big paperback from Little, Brown, 200 pages, \$9.95.--I am planning an attic office for Starside Engineering so I can take a portion of my mortgage as a tax writeoff; IRS says ya gotta have a room with a door used for that and nought else. So be it; with this and the book above I'm all set. Wing concentrates on making existing (and usually older) buildings "tight" for energy efficiency. What's different is how he explains the theory behind insulation--revealing how insulating wrong can literally rot your house out from under you. The diagrams are not as good as the Navy's, but what the hell--the text is as precise as it is hilarious. Haven't finished it all yet, but I can see he also goes into wood heat and passive solar retrofits. Worth having for the theory's sake; essential for urban homesteading.

True Names by Vernor Vinge, half an Ace Binary Star with George Martin's Nightflyer. I read this to kill time on the way to George Ewing's berserker and couldn't put it down. (Can't say the same for Nightflyer. Sigh.) Vinge spins a helluva yarn about the future of computer networking. People hook into the Big Net via encephalographic link and visualize dynamic computery abstractions as magic spells, monsters, swamps, castles, and so on. The Phone Phreaks have a field day marauding about the network, mucking things up--until one gets caught by the cops and set to tracking the others down to save his skin. This is a great example of fascinating concept that I just don't buy, but God, what a story. Why I don't buy it would take too much space, and I try real hard not to talk about computers much in this APA--but Vinge does it well. He suckers me in, which is what counts on a 15 hour jaunt to Michigan. My only gripe was a very weak ending--after pumping my adrenaline continuously for a hundred fifty pages, he dumps me flat. I enjoyed the trip enough not to resent it, though. Tepidly recommended, especially if you're as much a networking addict as I am.

The 8086 Primer by Stephen P. Morse, Hayden Books, 205 pages, \$8.95--IBM just announced their own personal computer, and though it's expensive, it's also one leg up on anything running an 8-bit CPU: It uses Intel's 8086 16-bit microprocessor. This means that the 8086 is now much more significant than it used to be. I'm no lover of IBM, but when the big boys move in, you take notice. This particular book is the best thing I've seen if you want to take on the 8086 cold turkey. Morse was the man who designed the 8086 architecture, and he takes pains to explain why every feature was included, (and most features were included to make it easy to implement PL/M) with the result that the instruction set seems a little more reasoned and a little less chaotic than most CPU instruction sets do at first reading. For sure, this kind of thing is not for the timid; assembler programming is both its own reward and its own punishment. But I found it damned refreshing to see a technical writer who was able to express in his writing the delight he took in his own acts of creation. Probably the most approachable assembly-language text you'll ever see. Read it by the man who made it up--and then sell some programs to IBM.

Zaps From the Backwoods

DE GEORGE EWING WASWTE

THE OUTER NIMITZ

Open Scene: Daytime interior. A sleazy bar, just off Hotel Street in Honolulu, Hawaii. A greasy calendar under the dartboard proclaims "Saturday December 6, 1941." William Bendix, drunk and desperate, is raving to the bartender about atomic subs, satellites, and President Eisenhower. Nobody is paying much attention. Two South Dakota National Guardsmen carrying M14 rifles are arguing heatedly about the Battle of Little Bighorn with the cigarette girl. Two sailors and a GI with 25th Infantry division patches are playing Pac Man on a 25-inch Sony color TV, labelled "Property of Schofield Barracks NCO Club". The lights go out momentarily and there is a pyrotechnic display of colored lightning bolts, which everybody ignores. Doug and Tony emerge from the ladies' washroom wearing their regulation Time Tunnel Turtle-necks and jeans. Tony is carrying a life preserver marked HMM Titanic--Southampton and the bartender brings their drinks without a word, still ignoring William Bendix, who is now raving about Richard Nixon. Science Fiction music beings to come out of the juke box, and the lights dim to about one third of normal. Rod Serling, wearing a snappy blue blazer with a gold Ziebart patch over the breast pocket, enters the bar and approaches the camera. Everyone else in the place is motionless.

Serling: The Kukui Bar and Grill, a sleazy joint just off Hotel Street. The place: Honolulu. The time: December 6, 1941. These people know damn well that they've entered the Toilet Zone. After all, most of us are dead. What these people don't realize is that this seedy little time-travellers' bar is suddenly going to be invaded by nearly five thousand aggressive, horny sailors and marines from the aircraft carrier U.S.S. Nimitz. They're just going to have to adjust; after all, anything is possible in the Toilet Zone.

At the words, "Toilet Zone," there is another crash of thunderbolts and the color TV goes crazy. Richard Chamberlain emerges from the refrigerator in doublet and hose, followed by Toshiro Mifune in a Samurai outfit, two Groacii, and John Belushi in a dark blue suit and sunglasses. Fade to first commercial.

Ok, OK, enuf already. Seriously, folks, The Final Countdown was one of the best science fiction films ever made by the U.S. Navy. The time travel warpstorm is predictably hokey, and there are a couple of tiny technical errors involving the radio spectrum, but everything else was first class. For airplane fanciers, the footage of flying is almost lyrical in its beauty and technical perfection. The sequence of the two F14's dodging in and out of the cloud cover and playing cat-and-mouse with the two Zeroes, complete with condensation envelopes on the shockwaves, was worth an academy award. Pappy Boyington said in his autobiography that the one thing he'd really like to do is go back to one of the big pacific dogfights with a good color movie camera and shoot some of the action. For Hollywood SF, the paradoxes are handled intelligently, especially the Lt. Commander who gets marooned on a desert island with Katherine Ross and thirty cases of C rations. One picky plot point: Once the Captain decides to intervene, why the elaborate air strike? Why not just nuke the Japanese fleet just as they are starting to launch, and then sit back and disavow all knowledge of the result?

* * *

SHOGUN--Last week on NBC was a further rebuttal to Jeff's contention that all television is rot. Read the review in Time Magazine which roughly parallels my opinion. Of course, much was left out which was good in the novel, including almost all of Toranaga's viewpoint on the convoluted pre-fujiwara politics, and one important character, the mama-san who was Kikko's teacher and really pivotal to the story was reduced to a ten-second walk-on. If anybody has access to the biography of Will Adams, the real-life model for the super-macho Englishman Blackthorne, please let me know. I wonder if they're going to do Tai-Pan for next season? I especially admire the courage of the crew in doing twelve hours of Elizebethan Samurai epic without English subtitles. Subtitles would have helped people who hadn't read the book, though of course Clavell probably would have done them in Portugese, just to be feisty. Did anybody out there manage to watch the whole thing without even once thinking of John Belushi or Gilbert & Sullivan?

MRS-KAL-EL-INITE
CARTOON



LOWLIFE FOOBS, by George M. Ewing
(With Aplogies to Jack Vaughan and Mrs. Carl Sagan)

(to be sung to the tune of "Jimmy Crack Corn")

Oh, We found the spacecraft floating free.
It had come from across the Galaxy.
And welded to a strut we found a plaque
with pictures an writing all across the back.

IT Said:

"Yourmother gurgles weech with lowlife foobs,
your mother gurgles weech with lowlife foobs,
your mother gurgles weech with lowlife foobs,
and the word is getting around!

The big male alien raised his hand
in a gesture known throughout the land.
Even a queltsch would understand
what the alien meant to say.

he said:

"Yourmother gurgles weech with lowlife foobs,
and your dog has metal fleas that bite;
If you grow up normal, you'll have to learn to fight,
'cause your mama gurgles weech all night!"

The other alien had golden hair
and the rest of her torso was completely bare;
even the technicians began to stare
at the lovliness evident there.

she said:

"your brother is crazy, he eats his beard,
and your father's in prison for being weird.
Your sister is known for her hairy boobs;
and your mother gurgles weech with lowlife foobs!"

The spacecraft fell into our atmosphere
and left us trembling with shock and fear
as we watched it burn and disappear,
the insult blazed in our brains:

your mother gurgles weech with lowlife foobs,
your mother gurgles weech with lowlife foobs,
Your mother gurgles weech with lowlife foobs,
and the word is ghetting around!"

CHICAGO PYROTECHNICS MANUSCRIPT CALL!



Defying all predictions, and despite popular demand, there will be another Chicago regional issue of *Pyrotechnics*, the magazine of discriminating techies. This one will come out in time for Capricorn (February 26) and will be edited and designed by Chuck Ott. It will feature

*Fancy Schmancy
Downtown
Typesetting*

and should rank right along with the invention of the blinkie in techie history.

This is your invitation to hop on this bandwagon. I need articles of interest to those who take an interest in both science fiction and technology. I need techie humor. I need artwork and cartoons. I need letters. I might even use some poetry. I probably don't need any more Maskinite jokes.

If you don't feel up to doing a whole article, check out the special feature of this issue, a compendium called *Glossing Over Robert Heinlein*. A complete description is given on the separate sheet attached to this one. For this project, your contribution can be as short as one paragraph; it will involve some research, most likely, but not much writing. I'd like to get contributions from as diverse a group as possible on this.

Deadlines:

On a project as complex as this one, I do not intend to be a nice guy about deadlines. Keep in mind that everything will have to be set in type (almost entirely by me, in my spare time), and also that the layout and play-around-with time will be much more than the usual *Pyro* issue.

On the other hand, if you fluff your deadline, all that

will happen is that I'll turn your copy over to Jeff Duntemann for possible use in another issue.

For *Glossing Over Robert Heinlein*, get your part of the project in by Thursday, November 12.

For other writing, the deadline for turning in copy is Thursday, December 10. If you happen to have access to a typesetter (discussed below) and want to use it, see me and we'll work out a deadline.

For artwork, the deadline is Thursday, December 31, if I know that you intend to submit it, and much earlier otherwise. Artwork will be fitted into the layout fairly early, so please don't surprise me.

I would greatly appreciate early submission of articles.

How to Contribute

I don't intend to use everything I get, and I will probably exercise my editorial option of asking for revisions on the stuff I do use. You don't have to take my advice, of course.

It would be a gracious touch to type your manuscript single-space on a five-inch column, justified if your typer does such things. That way, if I can't use it for some reason, it can be added to another *Pyro* without retyping.

You can mail your contribution to me at the address given below, or give it to me in person if you see me. You can also give manuscripts to practically anyone in Moebius Theatre, and I'll get them at the Wednesday night meeting. Mind your deadlines, though!

If you want to typeset your own article, and your typesetter has long-term storage, just run it off and send it to me. I'll spec it for the type and design that I want and pass it back to you for another run through the machine.

Artwork, of course, must be done in black ink on white

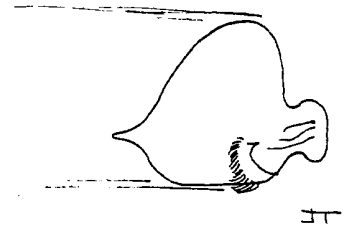
paper. I can probably get photostats to size, but I prefer not to shrink artwork more than one-fourth, and I'd rather not enlarge anything if I can avoid it. For those of you who were wondering, yes, Mr. Clip-Art will probably make an appearance in this issue.

Wondering whether your bright idea will work in this issue of *Pyro*? Don't be shy about asking me first.

My address is:

Chuck Ott
600 S. Dearborn
Apt. 405
Chicago, IL 60605
(312) 663-9038

The best time to call me is before noon on weekdays.



BILL THE WONDER BANDERSNATCH
ACHIEVES RELATIVISTIC SPEED

HAY THE FORTH BE WITH YOU
by Marty Franz

If you want to start an argument among a group of programmers, don't try politics or religion. Mention FORTH instead and stand back. People either love or despise this computer language, and in this article I'll look at some of the reasons why.

To start, let's consider what a computer language really is: a set of symbols that allow convenient communication between programmer and computer. A computer really "understands" only a limited set of instructions. Each of these is a unique sequence of binary codes (1's and 0's). You could, if you wanted, program a computer entirely in this "native tongue" and skip using a programming language. In the Early Days of Computing, way back in the 40's and 50's, that's exactly what was done. But for anything beyond making the front panel lights blink, this quickly becomes tedious. For example, the program I'm using to edit this article would require a sequence of over 56,000 1's and 0's. Can you imagine sitting at a switch panel painstakingly toggling in 56,000+ bits?

Not me, and neither could the early computer scientists. They wrote programs (what else?) to make the coding of other programs easier. The first of these program-coding programs simply accepted a terse mnemonic for each instruction and allowed the programmer to refer to individual memory locations by a label rather than a direct address. These programs were called "assemblers", since they constructed the program directly from the card deck containing the mnemonics and labels.

There were problems in using assemblers, however: you had to learn a new instruction set and a new bunch of mnemonics whenever you got a new computer, and, more importantly, you still had to go to great lengths to tell the machine about even simple mathematical objects like arrays and floating-point numbers. It wasn't until 1957 that the first formal "language" and translator program for mathematical formulae was developed at IBM by John Backus. The program, known as a "compiler" rather than an assembler, was nicknamed FORTRAN, short for "formula translator".

FORTRAN was a great success, because it allowed scientists and engineers who weren't familiar with the innards of computers to nonetheless write programs and solve problems using them. In 1960 somebody had the bright idea of creating a programming language (and translator program) geared to business problems, and COBOL, the Common Business Oriented Language, was developed. Since then, there's been an explosion of translators and programming languages, such as ALGOL, C, BLISS, Lisp, Pascal, APL, and BASIC. But all of them perform the same function as the first FORTRAN compiler: they take a sequence of source symbols, understandable to people, and translate them into a matching sequence of computer actions.

Enter FORTH at this point. FORTH was developed in the late 1960's by Charles Moore to translate programs that do rapid data acquisition on very small computers: not the type of application your average university FORTRAN program is geared to. In this environment, small program size, blinding execution speed, and rapid coding time are necessary, and FORTH fits the bill. These same criteria hold today for hobbyist micro-computer systems, with their small memory sizes and relatively slow processors.

How does FORTH work? Imagine a bunch of machine-language subroutines, each performing one tiny action. For examples, there's a subroutine to read a single character from a keyboard, and a subroutine to add two numbers together. Called individually, they aren't very powerful, but FORTH allows you to glue them together simply and rapidly to form new subroutines and programs. It does this by making providing a common place where all the subroutines can take and leave data: a last-in, first-out list of items called a stack.

The data stack works like a pile of plates in a cafeteria: the last data item put there by the current subroutine will be the first one taken by the subroutine after it. Even on the smallest computers, a data stack is an easy thing to implement, so this data passing is done very quickly.

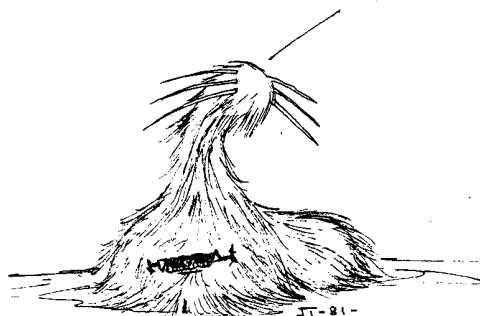
Inside the compiler, each subroutine lives at a unique machine address and has a unique symbolic name. A table called a "dictionary" matches the names to the addresses. When a program is typed in, FORTH changes the list of program symbols (which are subroutine names) into a list of addresses using this dictionary. In running the program, FORTH then works its way down this list of addresses, calling each subroutine in turn until the end of the list is reached.

Each subroutine address is called a "thread", since it serves to "tie" one step in the execution of a program to the next. A FORTH program thus consists of a list of these "threads". This is the "threaded code" that hackers speak of when they discuss FORTH. What makes FORTH programs so small is that each individual subroutine is very small, an average of only thirty bytes. FORTH also lets you add new subroutines to the dictionary very conveniently, so only a minimal portion of the language needs to be written in machine code: the rest can be written to call these few basic subroutines, much like geometric theorems are derived from a few basic postulates.

Well, why wouldn't anyone not like FORTH? It seems like the perfect hacker computer language: small, fast, and relatively simple to implement and understand. The answer lies with FORTH's syntax. Compilers like FORTRAN spend a good deal of time converting equations from the algebraic form we humans like to use to a form computers are happier with. To make FORTH so small and fast, this equation-conversion stuff was left out of the compiler. So humans using FORTH have to write expressions in a funny notational system called Reverse Polish Notation (RPN), the same scheme used on HP calculators. RPN is the type of thing that's easier to use than to describe! but it makes FORTH programs in source form pretty unreadable to someone used to FORTRAN or Pascal. The result is that FORTH is a "write-only" language, a grievous sin when the emphasis today is on structured, readable, documented programs.

Nonetheless, FORTH is a fascinating language, and a powerful tool in the right hands. If you're interested in learning more about FORTH, the best place to start is with the all-FORTH August 1980 issue of Byte magazine. It contains tutorial articles and a software directory, and it's available in reprint form from the Forth Interest Group (FIG) at POB 1105, San Carlos CA 94070. FIG also has cheap versions of FORTH for most popular microprocessors in source form and a bimonthly magazine called "FORTH Dimensions". Write them for dues and other available materials.

LUCKILY IT'S ONLY ONCE A MONTH...
EVER TRY GETTING YEAST OUT OF
ONE-METER-LONG FUR?



MARK EVANS AS THE
WEEBIE-BANDERSNATCH OF CBETZ.

QUARKS

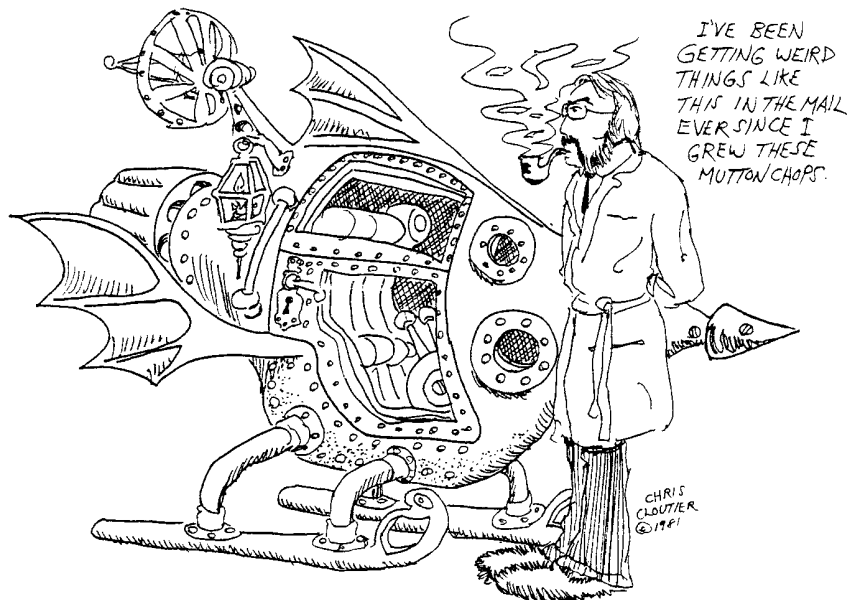
WELL, they're doing it to us again; by the time you get this the 18 cent stamp will be obsolete. It's an old, too-often sung litany: send yer 2's'N'20's to the above address...

I've been to Japan and found it overwhelming. Xerox paid the freight for an Apple III troubleshooting run to Tokyo, and with any luck I'll have a full report in the next Pyro. How can they do what they're doing? Briefly: They have virtually no defense budget. Helps to hide under Uncle Sam's nuclear umbrella. They are a hive culture, and the economics of scale work to their advantage. To a large extent their workers trade freedom for security, and appreciate what they get; there are no labor unions as we know them. Most important, government and Big Business are heavily in bed together. The result? Everybody is happy, everybody is employed; wealth is everywhere. Could we do it? Probably not. Too many people here think jobs grow out of the ground like cabbages; too many people here believe Hollywood's portrayal of industry; too many people just don't like to work.

You've already read of Chuck Ott's Chicago Pyro; it will be number 31. Pyro #30 will be out of Ann Arbor, masterminded by George Ewing and Lee Hart. Send your contributions NOW to George Ewing, PO Box 502, Cheboygan MI 49721. He's hoping to get it done around Thanksgiving or shortly afterward.

A rather important request: Type things you want to see in Pyro on strips of 5" paper, or somehowelsewise jigger it so that I don't have to retype everything. Mike Bentley, Bob Halloran, and I are trying like hell to start a software house, and spare time is at an all-time low. Contrary to rumor, I never insisted text had to be justified right-and-left, though that sure is fine if you can do it. See Dave Corner's contribs over the last few issues--no problems at all with that. Help keep Pyro's coming!

-30-



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